1895MNRAS..56...14.

(2) But the mean daily area of the faculæ has undergone a notable decline.

(3) The predominance as to spotted area has changed over definitely from the northern hemisphere to the southern.

(4) The mean daily spotted area has actually declined for the northern hemisphere as compared with 1892, the increase recorded for the whole disc being entirely due to the great activity of the southern hemisphere.

(5) The mean distance from the equator of all spots has reached the zone usually occupied at maximum, and, indeed, for the last four rotations of the year, has considerably overpassed it. The extraordinary outburst of 1893 August, which was followed so promptly by this decline in latitude, probably marks, therefore, the actual crest of the curve at maximum.

(6) The decline in latitude has been mainly witnessed in the southern hemisphere, and set in, as just stated, immediately after the close of the great outburst for that hemisphere in August.

(7) On the whole the maximum as to spotted area appears to have fallen in 1893 August, both for the southern hemisphere and for the Sun as a whole. For the northern hemisphere considered separately, it seems to have fallen nearly fourteen months earlier, towards the end of June or beginning of July 1892.

Royal Observatory, Greenwich:
1895 *October* 28.

Diameters of Saturn and his Rings, observed at the Royal Observatory, Greenwich, during the Opposition of 1895.

(*Communicated by the Astronomer Royal.*)

Measures of *Saturn's* rings and of equatorial and polar diameters were made with the filar micrometer on the 28-inch refractor during the months of April, May, and June 1895, the full aperture being used in all cases.

The distances of the edge of the outer ring, of the centre of Cassini's division, of the edge of the inner bright ring, and of the crape ring were measured from the nearer and further limbs of the planet, both on the preceding and following sides; the mean of two such measures giving the radius of a ring, and the difference giving the equatorial diameter of *Saturn*. Direct measures were also made of the polar diameter and of the width of Cassini's division. The latter was sharply defined, and was easy to measure, and seemed a little more distinct on the following than on the preceding side. Encke's division was seen at both ansæ on June 12 by the Astronomer Royal and Mr. Lewis.

The results obtained on the separate nights are given in the following table, as well as the number of separate determinations of each result. In the column "Observer" D denotes Mr. Dyson, and L Mr. Lewis. The measures have all been reduced to a mean distance of 9·53885, and the polar diameters have been corrected for the elevation of the earth above the plane of the ring.

1895MNRAS..56...14.

Date.	Observer.	Power.	Diameters of *Saturn*.		Outer radius of Outer Ring.		Width of Cassini's Division.		Radius to centre of Cassini's Division.		Inner radius of Inner Bright Ring.		Inner radius of Crape Ring.	
			Equatorial.	Polar.	Preceding.	Following.	Preceding.	Following.	Preceding.	Following.	Preceding.	Following.	Preceding.	Following.
1895.			″	″	″		″	″	″	″	′	″	′	″
Apr. 13	L.	670	17·56$_{20}$	...	20·12$_{10}$	20·18$_{10}$	...	...	...	...	...	...	...	...
14	D.	670	·71$_{19}$	16 72$_{7}$	·40$_{6}$	·17$_{3}$	...	...	17·22$_{7}$	17·17$_{4}$	12·48$_{6}$	...	...	...
23	L.	670	·92$_{48}$	17·20$_{7}$	·40$_{8}$	·26$_{8}$	0·53$_{4}$	0·61$_{4}$	·27$_{8}$	·37$_{8}$	·94$_{8}$	12·85$_{8}$	10·53$_{8}$	10·38$_{8}$
28	D.	670	·67$_{50}$	15·91$_{10}$	·09$_{8}$	·09$_{8}$	·49$_{4}$	·55$_{4}$	·11$_{8}$	·12$_{8}$	·45$_{8}$	·42$_{10}$	...	...
29	L.	670	·71$_{32}$	...	·13$_{8}$	·17$_{8}$	·52$_{4}$	·55$_{4}$	·19$_{8}$	·42$_{8}$	·86$_{6}$	13·00$_{6}$	·76$_{6}$	·50$_{6}$
May 11	L.	670	·71$_{22}$	16·71$_{11}$	·36$_{4}$	·26$_{6}$	·46$_{4}$	·48$_{4}$	·09$_{6}$	·19$_{6}$	13·01$_{6}$	12·89$_{6}$	...	...
13	L.	670	·79$_{10}$	17·02$_{9}$	...	...	...	...	...	...	...	...	...	...
31	L.	670	·88$_{20}$	...	·37$_{10}$	·53$_{10}$	·62$_{4}$	·44$_{2}$	17·13$_{6}$	...	...	...	·21$_{4}$	9·98$_{4}$
June 2	D.	480	...	...	...	...	·46$_{7}$	·41$_{6}$	...	...	...	...	...	...
6	L.	480	·81$_{10}$	...	·42$_{5}$	·53$_{5}$	...	...	...	...	...	...	...	...
7	L.	670	17·74$_{12}$	17·20$_{10}$	·06$_{6}$	·45$_{6}$	·40$_{4}$	·44$_{4}$	16·80$_{6}$	17·13$_{6}$	13·02$_{6}$	13·11$_{6}$	·20$_{4}$	10·13$_{4}$
12	L.	670	18·01$_{15}$	...	·26$_{5}$	...	·54$_{6}$	·65$_{6}$	...	...	...	...	·09$_{6}$	·03$_{6}$
18	L.	670	...	...	...	...	·51$_{4}$	·55$_{4}$	...	...	...	...	...	...
26	L.	670	17·53$_{6}$	...	20·27$_{4}$	20·64$_{4}$	0·54$_{4}$	0·67$_{3}$	...	...	...	...	10·42$_{2}$	10·35$_{2}$
Mean			17·754$_{254}$	16·793$_{54}$	20·262$_{74}$	20·328$_{70}$	0·507$_{45}$	0·535$_{37}$	17·116$_{49}$	17·233$_{40}$	12·793$_{40}$	12·854$_{36}$	10·368$_{30}$	10·397$_{30}$

1895MNRAS..56...14.

In addition to this, the position-angle of the major axis of the rings was measured with the following results :—

Date.	Position-angle of Major Axis.	Date.	Position-angle of Major Axis.
Apr. 13	359° 24′	June 6	358° 38′
14	358 2	7	359 20
23	360 18	12	360 0
29	359 24	18	361 20
May 11	359 23	20	361 15
13	359 22	26	360 10
31	359 15		

The diameter of *Titan* was measured on three nights as follows :—

Date.	Diameter of *Titan*.	No. of Measures.
Apr. 23	0″·990	6
May 11	0·828	11
June 12	1·028	4
	0·950	21

The mean results of the measures are given below, together with those obtained by Professor Hall at Washington 1885–1887, and by Professor Barnard at the Lick Observatory, Mount Hamilton, in 1895.

	Greenwich.	Mt. Hamilton.	Washington.
Equatorial diameter of Saturn ...	17″·754	17″·744	17″·72
Polar diameter of Saturn	16·793	16·307	...
Outer diameter of Outer Ring ...	40·590	40·249	40·45
Inner diameter of Outer Ring ...	34·870	34·864	34·95
Centre of Cassini's Division ...	34·349	34·306	34·53
Outer diameter of Inner Ring ...	33·828	33·748	34·11
Inner diameter of Inner Ring ...	25·647	25·522	25·75
Inner diameter of Crape Ring ...	20·765	20·737	20·52
Width of Cassini's Division ...	0·521	0·558	0·42
Width of Outer Ring	2·860	2·693	2·750
Width of Inner Ring	4·091	4·113	4·180
Width of Crape Ring	2·382	2·393	2·625

The following table, based on 92,797,000 miles, as mean distance of the Earth from the Sun, gives the actual dimensions of *Saturn's* system as determined at these three observatories :—

1895MNRAS..56...14.

	Greenwich. (miles)	Mt. Hamilton. (miles)	Washington. (miles)
Equatorial diameter of Saturn ...	76,190	76,150	76,050
Polar diameter of Saturn	72,066	69,980	...
Outer diameter of Outer Ring ...	174,190	172,730	173,590
Inner diameter of Outer Ring ...	149,640	149,620	149,990
Outer diameter of Inner Ring ...	145,170	144,830	146,380
Inner diameter of Inner Ring ...	110,060	109,530	110,500
Inner diameter of Crape Ring ...	89,110	88,990	88,060
Width of Cassini's Division ...	2,240	2,400	1,800
Width of Outer Ring	12,270	11,560	11,800
Width of Inner Ring	17,560	17,650	17,940
Width of Crape Ring	10,220	10,270	11,260

The agreement of the Greenwich, Mount Hamilton, and Washington results is very satisfactory, except in the case of the polar diameter, of which a comparatively small number of measures were made at Greenwich. If the low declination of the planet permits, it is intended to supplement these by more measures of the polar diameter at the next opposition.

Meridian Observations of Sirius and Procyon at the Royal Observatory, Greenwich, 1836–1894. By W. G. Thackeray.

In reducing a long series of observations such as the above to a common epoch, it is very essential to make the reductions on as homogeneous a system as possible, a matter of no little difficulty and trouble.

The following right ascensions were made with the transit instrument from 1836–1850, and with the transit circle from 1851–1894.

The difficulty of adjusting the observed right ascensions of stars to a fixed point—the point where the Sun crosses the Equator at the spring equinox—has been met by correcting the adopted places of those stars which have been used to ascertain the errors of the transit clock in accordance with the quantities given annually in the "Greenwich Observations" under the section of discussions of the position of the Ecliptic—a correction which for brevity we may refer to as the correction to the equinox. The opportunity for making such a correction has always been chosen at the time of making one of the periodical catalogues, and reference to the introduction to any of these catalogues will show the method observed.

In this investigation the equinox of the 1880 catalogue has been adopted as the standard of reference in forming the adopted right ascensions for 1890.

The following table gives the necessary corrections and the